

REMARKS

The Amendment, filed in response to the Office Action mailed July 9, 2009, is believed to fully address all and every issue raised in the Office Action. Favorable consideration and allowance of the application are respectfully requested.

Disposition of Claims and Specification Amendment

No claims are amended, canceled or added.

The specification is amended to replace page 15, of which contents are inadvertently partly missing. The amendment to paragraphs [0028]-[0030] on pages 15-16 are made to include the missed texts. No new matter is introduced. 37 CFR §1.57(a) provides that, if all or a portion of the specification or drawing(s) is inadvertently omitted from an application, but the application contains a claim under 37 CFR §1.55 for priority of a prior-filed foreign application, or a claim under 37 CFR §1.78 for the benefit of a prior-filed provisional, nonprovisional, or international application, that was present on the filing date of the application, and the inadvertently omitted portion of the specification or drawing(s) is completely contained in the prior-filed application, the claim for priority or benefit shall be considered an incorporation by reference of the prior-filed application as to the inadvertently omitted portion of the specification or drawings. MPEP § 201.17. The instant application is a §371 national stage application of PCT Application No. PCT/JP2005/006117 (WO 2005/096415 in Japanese language) and paragraphs [0028]-[0030] on page 7 of the WO 2005/096415 correspond to amended paragraphs [0028]-[0030] on pages 15-16 of the specification of the instant application. Entry and consideration of the specification amendment is respectfully requested.

Request for returning an initialed copy of SB/or Form submitted with IDS on May 22, 2008

Applicants note that the Office has not returned an initialed copy of the SB/08 Form submitted with the Information Disclosure Statement filed on May 22, 2008. Accordingly, Applicants again respectfully request the Examiner consider the IDS and, if considered, return an initialed copy along with a next Office Action.

Claims 4 and 5: Allowable Subject Matter

In the Office Action, claims 4 and 5 are indicated as being objected to, but would be allowable if rewritten into independent claims. Applicants note claim 4 is an independent claim and claim 5 is dependent from claim 5. In this regards, Applicants thank the Examiner for clarifying that independent claim 4 and its dependent claim 5 are allowable and acknowledging a mistake in indicating the status of these claims, on the telephonic conversation on August 12, 2009.

It is respectfully requested that the Office include a correct indication of status of claims 4 and 5 in the next Office Action.

Response to Rejection of Claim 3 - 35 U.S.C. § 103

1. Summary of Rejection

In the Office Action, claim 3 is maintained rejected under 35 U.S.C. 103(a) as assertedly being unpatentable over Takeda et al., Materials Research Bulletin, Vol. 29 (“Takeda”).

Takeda was cited and discussed in previous Office Actions and Responses.

In the current Office Action, the Office reiterates in general the same arguments as to why claim 3 is not patentable over Takeda. That is, the Office admits that Takeda does not expressly disclose heating the sodium-iron compound in an inert atmosphere in a temperature

range lower than 1000 in the course of rising temperature. With regard to the limitation “in an inert atmosphere,” the Office asserts that it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to heat the sodium-iron compound of Takeda in an inert atmosphere in order to obviate reactivity with oxygen because the skilled artisan recognizes that oxygen and impurities in the air may react with the compounds. Thus, it is noted that the Office’s rejection is based on the assumption that one skilled in the art the sodium-iron compound of Takeda (i.e., Na_2O_2 and Fe_3O_4) is susceptible to oxidization.

2. Applicants’ Arguments

(a) The Office Mischaracterizes the teachings of Takeda

Applicants respectfully traverse the rejection, because such assertion is based on mischaracterization of teachings of Takeda, and the rejection of claim 3 is based on such mischaracterization is not sustainable.

The claim 3 of the instant application recites:

3. A method for producing a positive electrode active material for non-aqueous electrolyte sodium secondary battery which comprises heating a metal compound mixture containing mainly a sodium compound and an iron compound at a temperature in the range from 400°C to 900°C to produce a composite oxide containing mainly a sodium compound and an iron compound,

wherein the mixture is heated in an inert atmosphere at a temperature of lower than 100°C in the course of rising of the temperature to said temperature range from 400°C to 900°C, and

wherein the resulting composite oxide is suitable for a non-aqueous electrolyte sodium secondary battery.

Takeda is an academic paper which relates to the sodium deintercalation from a sodium iron oxide. According to the Office, Takeda discloses the method for preparing $\alpha\text{-NaFeO}_2$ by

heating the mixture of Na_2O_2 and Fe_3O_4 at 600- 700°C. As the Office correctly recognizes, Takeda does not expressly disclose the “inert atmosphere” during the heating.

The Office considers that it would have been obvious to one of ordinary skill in the art to heat the material of Takeda (the mixture of Na_2O_2 and Fe_3O_4) in an inert atmosphere, because one skilled in the art would have recognized that oxygen and impurities in the air may react with Na_2O_2 and Fe_3O_4 (i.e., the compounds of Takeda)), and thus, would have been motivated to prevent oxidization of those compounds during the heating by employing an inert atmosphere.

Applicants respectfully submit that the Office’s reasoning is based on misunderstanding of the technology and the reason is explained below:

The material of Takeda is not a mixture of metallic sodium and metallic iron. The material is the mixture of Na_2O_2 and Fe_3O_4 . The compounds of Na_2O_2 and Fe_3O_4 do not react or hardly react with oxygen under the temperature of less than 100°C. Accordingly, the Office’s assertion that one skilled in the art would have been motivated to prevent oxidization of the material of Takeda is groundless.

(b) Office fails to provide prima facie case because it fails to provide rationale as to why one skilled in the art would have been modify the teachings of Takeda with respect to the certain atmosphere under a certain temperature

As the Office admits, Takeda dose not disclose the atmosphere during the heating and Takeda does not disclose or suggest adopting the inert atmosphere during the heating. In addition, Applicants respectfully submit that Takeda fails to teach heating a mixture in an inert atmosphere at a temperature lower than 100 °C, before heating the mixture to a temperature of 400 - 900 °C in an air atmosphere.

In this regards, it is noted that the Office asserts that Applicant recognizes the heating temperature directly effects surface characteristics of the active material. Applicants submit that it was Applicants who recognize first time a certain heating temperature under a certain atmosphere condition was result-effect variable. None of cited references teach that the heating temperature under certain atmosphere is a result-effective variable. Therefore, the Office fails to provide any rational as to why one skilled in the art would have motivated to modify the teachings of Takeda to reach the claimed subject matter with reasonable expectation of success.

In conclusion, the subject matter defined in the claim 3 is different from Takeda at least concerning the heating in an inert atmosphere at a temperature of lower than 100°C, and by adopting this condition, it can provide the active material of the non-aqueous electrolyte secondary battery having the advantageous effects which is free from the rapid reduction of discharge voltage with the progress of discharge. Figure 2 and Results of Example 2 in the specification of the instant application show such advantageous effects of the resulting product.

Accordingly, it is believed that claim 3 is patentable over Takeda and withdrawal of the rejection is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number **202-775-7588**.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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